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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,345	01/23/2004	Tie Liu	MS1-1811US	5777
22801	7590	07/24/2009		
LEE & HAYES, PLLC 601 W. RIVERSIDE AVENUE SUITE 1400 SPOKANE, WA 99201			EXAMINER RAVETTI, DANTE	
			ART UNIT 3685	PAPER NUMBER
			MAIL DATE 07/24/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/764,345

Applicant(s)

LIU ET AL.

Examiner

DANTE RAVETTI

Art Unit

3685

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 2,3,7,8,10-12 and 15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-6,9,13,14,17 and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Acknowledgements

1. This communication is in response to the Amended Application No. 10/764,345 filed on May 13, 2009.
2. Claims 1, 4-6, 9, 13-14 and 17-18 are currently pending and have been fully examined.
3. Claims 2-3, 7-8, 10-12 and 15 have been canceled by the Applicant.
4. For the purpose of applying the prior art, PreGrant Publications will be referred to using a four digit number within square brackets, e.g. [0001].

Response to Applicant's Remarks/Amendments

5. Applicant's remarks filed on May 13, 2009 have been fully considered, but are not persuasive. Here Applicant's newly added language is directed to a "hashing function." As the Applicant has not asserted that they are the inventors of this particular "hashing function" then a predictable result would have been to substitute one hashing function for another hashing function.¹ Therefore, the Examiner respectfully disagrees with the Applicant and maintains his rejection.

¹ Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. §103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 4-6, 9, 13-14 and 16-18 are rejected under 35 U.S.C. §103(a) as being unpatentable over Venkatesan et al., (US 2004/0001605) ("Vankatesan").

As to claim 1:

Vankatesan teaches substantially as claimed:

obtaining a digital good, the digital good having content which has perceptual characteristics ([0085]-[0093], Claim 1);

partitioning the digital goods into a plurality of regions ([0085]-[0093], Claim 1);

calculating rational statistics of one or more the regions of the plurality, so that the statistics of a region are representative of the region, wherein the calculating comprises generating the rational statistics of one or more regions of the plurality via a hashing function having a quotient of two weighted, linear, statistical combinations and wherein the rational statistics are semi-global characteristics, ([0085]-[0093], Claim 1);

quantizing the rational statistics ([0085]-[0093], Claim 1);

marking the digital good with the quantized rational statistics of the plurality of the regions ([0085]-[0093], Claim 1).

weighted, linear, statistical combinations ([0061]);

Vankatesan does not expressly teach:

wherein numerator of the quotient is a first of the two weighted, linear, statistical combinations and wherein denominator of the quotient is a second of the two weighted, linear, statistical combinations;

However, Vankatesan expressly teaches:

[0061] Examples of such pseudo-random statistics may be linear statistics. These linear statistics of a (pseudo-randomly) chosen region are given by weighted linear combination of data in that region (where weights are chosen pseudo-randomly).

[0099] A suitable statistic for such calculation is the mean (e.g., average) of the values of the individual coefficients in each region (averages correspond to special case of choosing the vectors $[\alpha_{sub.1}]$ s.t. they are uniform in regions $[R_{sub.1}]$ and zero everywhere else). Other suitable statistics and their robustness are discussed in Venkatesan, Koon, Jakubowski, and Moulin, "Robust image hashing," Proc. IEEE ICIP 2000, Vancouver, Canada, September 2000 for images and in Mihcak and Venkatesan, "A Tool for Robust Audio Information Hiding: A Perceptual Audio Hashing Algorithm", IHW 2001, Pittsburgh Pa. for audio signals. In this document, no information embedding was considered, but similar statistics were discussed.

"Robust Image Hashing" was disclosed in Vankatesan, and a predictable result would have been to substitute one hashing function for another hashing function.²

The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known

² Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

in the field, the combination must do more than yield a predictable result.³

As to claims 2 and 3:

Canceled by the Applicant

As to claims 4 and 17:

wherein the hashing function is h and h is defined by ([0131]-[0144])

$$h_i = \frac{\sum_{j \in R_i} \alpha_{ij} s_j}{\sum_{j \in R_i} b_{ij} s_j}$$

Where:

- α_{ij} is the j^{th} element of α_i and α_i are a pseudo-random generated weight factors;
- b_{ij} is the j^{th} element of b_i and b_i are a pseudo-random generated weight factors;
- s denotes the digital good of dimension $N \times 1$;
- R_i are the plurality of regions, where $R_i \in \{1, 2, \dots, N\}$.

³ KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (U.S. 2007);

As to claim 5:

Vankatesan expressly teaches:

wherein the partitioning comprises segmenting the digital good in a plurality of overlapping regions ([0092], Claim 2);

As to claim 6:

Vankatesan expressly teaches:

wherein the watermarking comprises embedding a watermark via quantization ([0100], [0106], and Claim 8);

As to claims 7 and 8:

Cancelled by the Applicant

As to claim 9:

Vankatesan expressly teaches:

obtaining a digital good, the digital good having content which has perceptual characteristics ([0085]-[0093], Claim 1); and

using quantization (Abstract, [0016], [0044], [0046], [0049], [0062], [0065], [0066], [0189], [0198]-[0199], Figure 7),

watermarking the digital good with a watermark ([0007], [0014], [0019], [0029]-[0030], [0044], [0046], [0049], [0068], [0076], Figure 1);

wherein such quantization is based upon semi-global characteristics of regions of the digital good (Abstract, [0050], [0069]-[0074], [0092], Claim 23-28, 33),

wherein such semi-global characteristics are generated via a hashing function employing a quotient of at least two weighted linear combinations of statistics of the regions of the digital good (Abstract, [0050], [0069]-[0074], [0092], Claim 23-28, 33);

Vankatesan does not expressly teach:

wherein numerator of the quotient is a first of the two weighted, linear, statistical combinations and wherein denominator of the quotient is a second of the two weighted, linear, statistical combinations;

However, Vankatesan expressly teaches:

[0061] Examples of such pseudo-random statistics may be linear statistics. These linear statistics of a (pseudo-randomly) chosen region are given by weighted linear combination of data in that region (where weights are chosen pseudo-randomly).

[0099] A suitable statistic for such calculation is the mean (e.g., average) of the values of the individual coefficients in each region (averages correspond to special case of choosing the vectors [.alpha..sub.1] s.t. they are uniform in regions [R.sub.1] and zero everywhere else). Other suitable statistics and their robustness are discussed in Venkatesan, Koon, Jakubowski, and Moulin, "**Robust image hashing**," Proc. IEEE ICIP 2000, Vancouver, Canada, September 2000 for images and in Mihcak and Venkatesan, "A Tool for Robust Audio Information Hiding: A Perceptual Audio Hashing Algorithm", IHW 2001, Pittsburgh Pa. for audio signals. In this document, no information embedding was considered, but similar statistics were discussed.

"Robust Image Hashing" was disclosed in Vankatesan, and a predictable result would have been to substitute one hashing function for another hashing function.⁴

The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.⁵

⁴ Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

⁵ KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (U.S. 2007);

As to claims 10-12:

Cancelled by the Applicant

As to claim 13:

Vankatesan teaches substantially as claimed:

a partitioner configured to segment a digital good into a plurality of regions ([0085], [0090], [0092]-[0093], [0095], [0098], Claim 40);

a region-statistics calculator configured to calculate rational statistics of one or more of the plurality of regions, wherein the statistics of a region are representative of that region, wherein the region-statistics calculator is further configured to generate the rational statistics of one or more regions of the plurality via a hashing function having a quotient of two weighted, linear, statistical combinations and wherein the rational statistics are semi-global characteristics ([0085], [0098], [0100], [0109]-[0110], Claim 40);

A region quantizer configured to quantize the rational statistics of a region (Claim 40); and

A digital-goods watermarker configured to generate a watermarked good using and the quantized rational statistics (Claim 40);

Vankatesan does not expressly teach:

wherein numerator of the quotient is a first of the two weighted, linear, statistical combinations and wherein denominator of the quotient is a second of the two weighted, linear, statistical combinations;

However, Vankatesan expressly teaches:

[0061] Examples of such pseudo-random statistics may be linear statistics. These linear statistics of a (pseudo-randomly) chosen region are given by weighted linear combination of data in that region (where weights are chosen pseudo-randomly).

[0099] A suitable statistic for such calculation is the mean (e.g., average) of the values of the individual coefficients in each region (averages correspond to special case of choosing the vectors $[\alpha_{sub.1}]$ s.t. they are uniform in regions $[R_{sub.1}]$ and zero everywhere else). Other suitable statistics and their robustness are discussed in Venkatesan, Koon, Jakubowski, and Moulin, "Robust image hashing," Proc. IEEE ICIP 2000, Vancouver, Canada, September 2000 for images and in Mihcak and Venkatesan, "A Tool for Robust Audio Information Hiding: A Perceptual Audio Hashing Algorithm", INW 2001, Pittsburgh Pa. for audio signals. In this document, no information embedding was considered, but similar statistics were discussed.

"Robust Image Hashing" was disclosed in Vankatesan, and a predictable result would have been to substitute one hashing function for another hashing function.⁶

The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.⁷

As to claim 14:

Vankatesan expressly teaches:

wherein the region statistics is further configured to generate the rational statistics of one or more regions of the plurality via a hashing function ([0098], [0206], [0215]-[0216], Claim 40);

As to claim 15:

Canceled by the Applicant

As to claim 16:

Vankatesan expressly teaches:

wherein the partitioner is further configured to segment a digital good into a plurality of overlapping regions ([0030], [0044], [0065], [0073]-[0082], Figure 3, Claim 42);

⁶ Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

⁷ KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (U.S. 2007);

As to claim 18:

Vankatesan expressly teaches:

obtaining a digital good, the digital good having content which has perceptual characteristics ([0030], [0044], [0065], [0073]-[0082], Figure 3, Claim 42);

partitioning the digital good into a plurality of regions ([0085]-[0093], Figure 4-6, Claim 1);

wherein the partitioning comprises segmenting the digital good into a plurality of overlapped regions ([0092], Claim 2);

calculating rational statistics of one or more the regions of the plurality, the calculated rational statistics of a particular region are representative of the particular region, wherein the rational statistics are semi-global characteristics ([0085]-[0093], Claim 1);

quantizing the rational statistics ([0085]-[0093], Claim 1);

watermarking the digital good with the quantized rational statistics of the plurality of the regions, wherein the watermarking comprises embedding a watermark via quantization, whereby the watermarking facilitates protection of the digital good so that the digital good is slightly altered to embed a detectable mark in manner that preserves the perceptual characteristics of the content, the watermark associating the content of the digital good with a producer, provider, content owner, or distributor of the content ([0085]-[0093], Claim 1);

wherein the calculating comprises generating the rational statistics of one or more regions of the plurality via a hashing function, h , ([0131]-[0144]);

Vankatesan does not expressly teach:

that hashing function having quotient of two weighted, linear, statistical combinations;

However, Vankatesan expressly teaches:

[0061] Examples of such pseudo-random statistics may be linear statistics. These linear statistics of a (pseudo-randomly) chosen region are given by weighted linear combination of data in that region (where weights are chosen pseudo-randomly).

[0099] A suitable statistic for such calculation is the mean (e.g., average) of the values of the individual coefficients in each region (averages correspond to special case of choosing the vectors $[\alpha_{ij}]$ s.t. they are uniform in regions $[R_{ij}]$ and zero everywhere else). Other suitable statistics and their robustness are discussed in Venkatesan, Koon, Jakubowski, and Moulin, "Robust image hashing," Proc. IEEE ICIP 2000, Vancouver, Canada, September 2000 for images and in Mihcak and Venkatesan, "A Tool for Robust Audio Information Hiding: A Perceptual Audio Hashing Algorithm", IHW 2001, Pittsburgh Pa. for audio signals. In this document, no information embedding was considered, but similar statistics were discussed.

"Robust Image Hashing" was disclosed in Vankatesan, and a predictable result would have been to substitute one hashing function for another hashing function.⁸

The Court recognized that when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.⁹

$$h_i = \frac{\sum_{j \in R_i} \alpha_{ij} s_j}{\sum_{j \in R_i} b_{ij} s_j}$$

Where:

⁸ Ex parte Smith, 83 USPQ2d 1509 (Bd. Pat. App. & Int. 2007); Claims in application for patent on pocket insert for book are obvious in view of combination of two prior art patents, since claims are combinations that merely unite old elements with no change in their respective functions, and which yield predictable results, since neither applicant's specification nor her arguments present any evidence that modifications necessary to effect combinations are uniquely challenging or difficult for person of ordinary skill in art, and since claimed improvement is no more than simple substitution of one known element for another, or mere application of known technique to piece of prior art ready for improvement. KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385 (U.S. 2007);

⁹ KSR International Co. v. Teleflex Inc., 82 USPQ2d 1385, 1395 (U.S. 2007);

- a_j is the j^{th} element of a_i and a_i are a pseudo-random generated weight factors;
- b_j is the j^{th} element of b_i and b_i are a pseudo-random generated weight factors;
- s denotes the digital good of dimension $N \times 1$;
- R_i are the plurality of regions, where $R_i \in \{1, 2, \dots, N\}$.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. §1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS from the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date of the advisory action is mailed, and any extension fee pursuant to 37 CFR §1.136(a) will be calculated from the mail date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure.

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Mr. Dante Ravetti whose telephone number is (571) 270-3609. The examiner can normally be reached on Monday – Thursday 9:00am-5:00pm.

If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Calvin Hewitt II may be reached at (571) 272-6709. The fax phone number for the organization where this application or proceeding is assigned is (571) 270-4609.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system see <http://pair-direct.uspto.gov>. Should you have questions on access to the private PAIR system, please contact the Electronic Business Center (EBC) at 1-(866) 217-9197. If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 1-(800) 786-9199 (IN USA or CANADA) or 1-(571) 272-1000.

/Dante Ravetti/
Examiner, Art Unit 3685
Monday, July 13, 2009

/Calvin L Hewitt II/
Supervisory Patent Examiner, Art Unit 3685